CLOSURE PLAN

THE DIAL CORPORATION
MAIN FACILITY, 9300 RAYO AVENUE
SOUTH GATE, CALIFORNIA

Prepared for

The Dial Corporation
Phoenix, Arizona

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Closure Plan
The Dial Corporation
Main Facility, 9300 Rayo Avenue
South Gate, California

The material and data in this closure plan were prepared under the supervision and direction of the undersigned.

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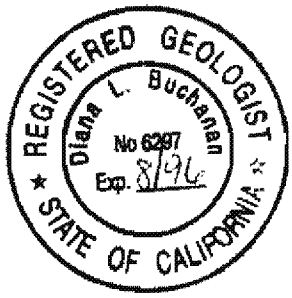

for

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1 INTRODUCTION

This document outlines a workplan for closure of the Dial Corporation (Dial) Main Facility at 9300 Rayo Avenue in South Gate, California (Figure 1). The closure plan presented below includes procedures and sampling protocols for closure of waste management units (WMUs) such as sumps, clarifiers, and above-ground storage tank (AGT) containment areas, and procedures for monitoring well installation and soil boring programs. This scope of work follows the closure strategy outlined in a letter prepared by EMCON and forwarded to the California Regional Water Quality Control Board, Los Angeles Region Site Cleanup Unit (RWQCB) on May 20, 1996. The May 20, 1996, letter was prepared to respond to RWQCB (February 13, 1996) comments and closure conditions for the Main Area. Further, the May 20 letter incorporated discussions held between EMCON, Dial, Quantum Management Group, Incorporated (Quantum) and the RWQCB on May 8, 1996, during which the closure plan was initially presented to the RWQCB staff. The RWQCB has verbally indicated that the sampling strategy presented in the May 20, 1996, letter is sufficient for closure of the Main Area.

In addition to the closure of the AGTs and WMUs at the Main Area property, a soil boring program is presented to close the soil vapor extraction system (SVES) in the area of the former garage and laboratory (Drawing 1). The SVES was operational during 1995 and was shut down in late December, as the recovery had decreased to asymptotic levels.

The elements of the risk assessment program to address the dodecylbenzene-impacted soil in the alkylate unloading area are not presented in this workplan and have been previously submitted to the RWQCB (EMCON June 6, 1996). As discussed in our May 8, 1996, meeting, the risk assessment program will be administered apart from the elements of the closure sampling for the Main Area. However, the sampling program for analysis of the physical characteristics of the soil in the area of the former alkylate unloading sump is presented in this workplan. Drawing 1 provides the site layout showing previous sampling locations and AGTs and WMUs. No discussion of the assessment history is provided in this closure plan. Reference is made to previous EMCON reports and quarterly letters for a complete discussion of assessment (April 1993 and August 1992) and remedial history (February 1996). The Health and Safety Plan for this assessment and closure program is presented in Appendix A.

1.1 Scope of Work

The workplan has been divided into the following elements consistent with previous RWQCB comments and our response and closure strategy:

- Additional Assessment Program
- WMU Closure
- AGT Closure

The additional assessment program provides sampling procedures for the exploratory soil borings, hand auger borings, and monitoring wells proposed by EMCON (May 20, 1996) to meet the RWQCB additional assessment requirements for closure of the facility. This section also contains the sampling program and procedures to determine physical soil characteristics in the area of the alkylate unloading sump. The data generated from this sampling program will be used to build a vadose-zone fate and transport model for dodecylbenzene-impacted soil as part of the risk assessment. The confirmatory soil boring program for closure of the SVES will also be provided in this section.

The WMU closure program pertains to former clarifiers, sumps, drains and trenches and is provided consistent with the EMCON (May 20, 1996) proposal as shown on Drawing 1. Forty-three (43) soil samples are proposed for closure of the WMUs at the main area site consistent with the sampling plan outlined in Table 1. Similarly, the closure program for AGTs is provided consistent with the EMCON (May 20, 1996) closure strategy and is outlined on Table 2, with the sample areas shown on Drawing 1. Twenty-five (25) soil samples are proposed for closure of the AGT containment areas.

The details of the proposed sampling and analysis program for closure of the Dial Main Facility are provided in the following sections.

1.2 Prefield Activities

Prior to the initiation of site activities, EMCON will notify the demolition subcontractors to coordinate the closure activities with the ongoing site demolition operations. EMCON will also schedule the drilling, analytical, disposal, geophysical, and surveying subcontractors for the project. EMCON will obtain the necessary groundwater monitoring well installation permits as required by the Los Angeles County Department of Health Services, and arrange for all of the necessary field materials and equipment. Underground Service Alert will be notified at least three (3) days prior to drilling to allow sufficient time for the operators of public and private utilities to mark the locations of their respective utilities in the vicinity of the proposed boring and well locations. The RWQCB will be notified at least 72 hours prior to the initiation of drilling, well development, and closure sampling activities.

Consistent with the RWQCB request (Comment No. 1) in their February 13, 1996, WMUs, former sampling locations, equipment pads, buildings, and AGT containment areas were surveyed. Drawing 1 is the scaled map generated, in part, from the survey program completed in April 1996. prior to site demolition.

2 ADDITIONAL ASSESSMENT PROGRAM

2.1 Confirmatory Soil Borings "Old Garage and Laboratory"

Three (3) soil borings are proposed to a total depth of 50 feet below ground surface (bgs) to confirm the remediation of petroleum hydrocarbon and VOC-impacted soil to acceptable levels in the vicinity of the former gasoline underground storage tanks (USTs) (Drawing 1 and Figure 2). The proposed borehole locations have been selected based on analytical data from previous soil borings in the vicinity of the old garage and laboratory. Figure 2 shows the proposed borehole locations (CB-1 through CB-3) and isoconcentration contours of the approximate subsurface extent of total petroleum hydrocarbon (TPH) and 1,2-dichloroethane (1,2-DCA) impacted soil prior to startup of the SVES.

2.1.1 Drilling and Sample Collection

Soil borings CB-1 through CB-3 will be initially hand-augered to an approximate depth of 5 feet bgs to minimize potential damage to subsurface obstructions that may not have been detected by conventional geophysical locating techniques conducted during the prefield activities. The three (3) soil borings will be drilled with a truck-mounted, hollow-stem auger rig. Continuous flight augers measuring approximately 6 inches in diameter will be used to advance each borehole to the target depth. Before sampling, all equipment that comes in contact with potentially impacted material will be cleaned with a dilute solution of phosphate-free laboratory-grade detergent (such as Liquinox™) and deionized water. Next, the equipment will be rinsed in water, then rinsed once again in distilled water, and air-dried. The drill rig equipment and drill tools will be steam cleaned before use and after each borehole completion.

Undisturbed soil samples will be collected at approximately 5-foot vertical intervals over the entire depth of each borehole. At each sample collection horizon, a 1.5-foot-long nominal 2-inch diameter, split tube type drive sampler will be advanced 1.5 feet ahead of the lead flight auger. The sampler will be equipped with three thin-walled brass inserts that measure 6 inches in length. The sampler will be introduced through the auger stem and driven into the undisturbed soil beneath the auger bit to ensure the samples are free of cuttings and slough from the borehole walls. The sampler will be driven with a standard penetration test detailed in ASTM D1586. The number of blows required to advance the

sampler each 6-inch interval will be recorded on a boring log. All soil borings will be backfilled with bentonite/cement grout following sample collection.

Upon retrieval, the soil in the upper sample sleeve will be examined by the field geologist for the purpose of logging the borehole. Soil borings will be logged by or under the direct supervision of a California registered geologist, certified engineer, or certified engineering geologist. The field geologist will prepare lithologic descriptions of the soils encountered (based on examination of auger cuttings and the upper soil sample) and record this information on a boring log. Lithologic descriptions will be based on the Unified Soil Classification System (ASTM C2488-69). In addition, percent recovery will be reported for each sampling interval. The middle sample sleeve will be removed and packaged for transport to a California state-certified laboratory for analysis. The ends of the sleeve will be covered with Teflon™ sheeting and sealed with clean plastic caps. A label will be affixed to the sleeve which contains the following information: borehole identification, project identification, depth interval, date and time of collection, sampler identification, and analyses required. This information will also be noted in a field logbook that will be maintained for each borehole. The labeled sleeve will then be sealed in a plastic bag and placed in an insulated cooler refrigerated using ice packs.

The soil in the lower sleeve will be retained for qualitative organic vapor headspace analysis in the field. To conduct headspace analyses, a portion of the soil from the lower sleeve (approximately 4 ounces) will be placed in a sample jar, and the mouth of the jar will be covered with aluminum foil and capped. The soil vapors will be allowed to equilibrate in the jar for at least 15 minutes. The sampling inlet of an organic vapor analyzer or photoionization detector (PID) will be inserted through the foil so that the headspace air can be measured for VOCs. The results of the field screening will be recorded in the field logbook and on the boring log.

Chain-of-custody forms will accompany the samples to the laboratory. Department of Transportation regulations (49 CFR Parts 171 through 179) will be followed when commercial carriers are used to transport samples. Samples will be appropriately secured, packed and cooled during transport. The method of shipment will be recorded on the chain-of-custody form. If commercial carriers are used, the cooler containing the samples will be sealed and relinquished using the chain-of-custody form. Upon receipt at the laboratory, the sample custodian will document the condition of the cooler contents.

Drill cuttings from soil borings will be stockpiled and covered with visqueen plastic sheeting. Rinseate and disposable equipment (gloves, field filters, etc.) will be stored on site in 55-gallon Department of Transportation (DOT) 17-H drums. The drums will be appropriately labeled with material type, origin, and date of generation. Soil samples from the borings will be used to characterize the soil waste generated. Composite decontamination water samples will be collected (one per four drums) for analysis. Following sample analysis, a determination of the waste category will be made according

to the definitions of Title 22, Chapter 11 of the California Code of Regulations (CCR), and 40 CFR Section 261. Materials will be disposed at an appropriate licensed waste-disposal facility.

2.1.2 Laboratory Analyses

Ten (10) soil samples from each confirmatory boring will be retained for chemical analysis (Table 3). These samples will be analyzed for Total Petroleum Hydrocarbons-Fuel Characterization (TPH-FC), volatile organic compounds (VOCs), and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using U.S. Environmental Protection Agency (EPA) Methods 8015 Modified FC, 8010, and 8020, respectively.

2.2 Groundwater Monitoring Wells

Well borings MW-11 through MW-13 will be drilled to a total depth of approximately 70 feet bgs using 10-inch O.D. hollow-stem auger drilling equipment (Drawing 1). The three borings will be converted to groundwater monitoring wells in order to meet the request of the RWQCB (Comment No. 3, February 13, 1996) and delineate the extent of dissolved-phase benzene in groundwater in the vicinity of monitoring wells MW-6 and MW-7 (Drawing 1). All drilling, soil sampling, and waste handling activities will be performed consistent with the procedures detailed in section 2.2.1. Soil samples will be collected at 5-foot depth intervals for logging purposes only. No chemical analysis of soil samples collected will be performed.

2.2.1 Groundwater Monitoring Well Installation

Each well boring (MW-11 through MW-13) will be converted into a groundwater monitoring well in accordance with California Department of Water Resources (DWR) well standards under a permit from the County of Los Angeles DHS. The monitoring wells will be constructed by installing 4-inch diameter flush-threaded PVC well casing and 0.02-inch slotted intake screen. Each well will be screened to a depth of approximately 70 feet bgs, or 20 feet below first encountered groundwater. A filter pack of No. 3 Monterey sand will be placed in the annular space of each boring from 5 feet above the slotted interval to the total depth of the boring. A bentonite seal will be placed above the sand pack and will be hydrated with potable water. The remaining annular space surrounding the blank casing will be backfilled with cement-bentonite grout, or equivalent, to approximately 2 feet below grade. The top of each monitoring well will then be covered with a PVC slip cap, secured in an enclosed water-tight riser pipe extended 3 feet above grade, and set in concrete.

The wellhead elevations and locations will be surveyed by a California-licensed surveyor. Elevations will be surveyed relative to mean sea level and the locations of the wells will be specified in Universal Transverse Mercator coordinates.

2.2.2 Well Development and Groundwater Sampling

The monitoring wells will be developed within 48 hours after installation to restore the natural hydraulic conductivity of the formation, remove sediments from the well casing, and stabilize the filter pack. Groundwater level measurements will be recorded prior to development, and each well will then be developed using a truck-mounted surge block, stainless steel bailer, and 2-inch diameter submersible purge pump. During the development, water will be purged and monitored for turbidity, pH, temperature and conductivity. When these parameters stabilize to within 15 percent for two well volumes, well development will be considered complete. At least four casing volumes of groundwater are generally purged to achieve stabilization unless the well yield is very low. If the well recovery exceeds two hours, the individual well will be purged to dryness two times.

Within 48 hours after development, the wells will be gauged, purged of three to four casing volumes of groundwater, and monitored for the above parameters. When the groundwater parameters stabilize and the wells are allowed to recover to within 80 percent of their static water levels (within 24 hours of purging), groundwater samples will be collected from each well using a disposable Teflon bailer. The groundwater samples will be transferred to containers appropriate to each U.S. EPA analytical method being employed. After collection, the groundwater samples will be labeled, stored in an insulated container at a temperature of less than 4°C, and transported to a state-certified laboratory along with appropriate chain-of-custody documentation.

Purge water generated during well development and sampling will be contained in sealed DOT-approved 55-gallon drums. The drums will be stored on the Dial Main Facility property pending consideration of disposal and treatment options.

2.2.3 Laboratory Analyses

Groundwater samples collected from wells MW-11 through MW-13 will be analyzed for TPH-FC, VOCs, and chloride using U.S. EPA Methods 8015 Modified FC, 8010, and 300.0, respectively. In addition to the three (3) groundwater samples collected from the newly installed monitoring wells, one trip blank and one pump blank will also be analyzed by a state-certified analytical laboratory for VOCs.

2.3 Exploratory Soil Borings

Three exploratory soil borings (EB-1 through EB-3) will be drilled on site to a depth of 50 feet bgs using 6-inch diameter hollow-stem auger equipment (Drawing 1).

Boring EB-1 will be drilled adjacent to the clarifier at the south site gate and existing monitoring well MW-3 to determine if VOCs are present in vadose zone soils consistent with the RWQCB's request (Comment No. 7, February 13, 1996). Ten (10) soil samples will be collected from boring EB-1 and retained for chemical analysis (Table 3). These samples will be analyzed for TPH-FC, total recoverable petroleum hydrocarbons (TRPH), VOCs, and BTEX using U.S. EPA Methods 8015 Modified FC, 418.1, 8010, and 8020, respectively.

Soil borings EB-2 and EB-3 will be drilled in the area of the alkylate unloading sump at the southeast corner of the property to assess physical soil characteristics for fate and transport modeling. All drilling, soil sampling, and waste handling activities will be performed consistent with the procedures detailed in section 2.1. After the borings have been completed, each borehole will be backfilled with neat cement grout and capped with concrete. Soil samples collected for physical parameter testing (vertical permeability) will be placed into specially-designed, padded containers to minimize disturbance during transport to the soils laboratory. Efforts will be made to minimize handling of these samples and each sample will be placed in an upright position in the container.

A total of six (6) soil samples from borings EB-2 and EB-3 will be analyzed to determine the physical properties of soil in the area of the alkylate unloading sump (Table 3). The samples will be tested by ASTM D2937 for moisture content and dry unit weight, and by ASTM D5084 and U.S. EPA 9100 for vertical permeability. In addition, the soil samples will be analyzed for total organic carbon by U.S. EPA Method 415.1/9060.

2.4 Hand Auger Borings

A total of ten (10) hand auger borings will be drilled and sampled at depths of either 3 or 5 feet bgs to assess the presence of soil impacts from compounds generated by previous site industrial processes (Drawing 1). Each of these borings will be drilled after the existing facility structures have been removed. Hand auger boring HA-1 will be drilled at the location of the former 100-gallon gasoline tank located north of former Building 3. Borings HA-2 through HA-6 will be drilled within stained areas identified inside the limits of Building 6. Hand auger borings HA-7 and HA-8 will be drilled below the alkane oil and fuel oil tanks, respectively. Boring HA-9 will be drilled in the drum dispensing area outside Building 2, and boring HA-10 will be drilled in the caustic unloading area north of Building 6.

2.4.1 Drilling and Sample Collection

Each hand auger boring will be drilled using a 3-inch diameter earth auger attached to a 4-foot long T-bar that is operated manually. Soil samples will be collected using a sampling device consisting of a steel penetration shoe attached to a 0.75-inch diameter steel rod and sliding hammer. The shoe will be equipped with a brass sample retention liner approximately 4 inches long and 2 inches in diameter. To collect samples, the shoe and the liner will be driven with the sliding hammer into the undisturbed soil at the bottom of the borehole. After the sampler is driven approximately 4 inches, the shoe will be removed from the boring and the sample liner will be removed from the shoe and sealed on both ends with Teflon tape and plastic end caps. The samples will be retained for laboratory analysis and will be field screened for hydrocarbon vapors using a PID. In addition, soil samples and drill cuttings will be logged by a EMCON geologist using ASTM D2488, consistent with the Unified Soil Classification System. The hand auger and sampling equipment will be washed in a nonphosphatic cleaning solution and rinsed with deionized water prior to each sampling episode. Upon completion of the sampling, each boring will be backfilled with bentonite pellets and hydrated.

Soil cuttings generated during drilling activities will be stockpiled on and covered with visqueen sheeting at a central location on site awaiting characterization for disposal. Equipment rinseate will be contained in sealed 55-gallon DOT drums and stored on site. Composite samples will be collected for characterization of the stockpiled soil and drummed investigative waste.

2.4.2 Laboratory Analyses

Soil samples collected from hand auger borings HA-1 through HA-10 will be submitted for analyses according to the plan outlined on Table 3. The sample from boring HA-1 will be analyzed for TPH-FC using U.S. EPA Method 8015 Modified FC and for BTEX using U.S. EPA Method 8020. Soil samples from borings HA-2 through HA-6 will be analyzed for TRPH using U.S. EPA Method 418.1. Soil samples from HA-7 and HA-8 will be analyzed for TPH-FC using U.S. EPA Method 8015 Modified FC. Samples collected from borings HA-9 and HA-10 will be analyzed VOCs and pH using U.S. EPA Methods 8010 and 150.1, respectively.

3 WASTE MANAGEMENT UNIT CLOSURE

Upon completion of the demolition of all above-ground facilities, demolition and closure of WMUs including sumps, clarifiers, and drains will begin. EMCON will perform closure soil sampling and analysis to satisfy the RWQCB's closure request for these facilities. Table 1 presents the proposed sump, clarifier, and drain closure sampling and analysis plan. The plan includes descriptions of the sumps, clarifiers and drains; identifies previous sampling points and analyses; and lists the additional proposed closure analytes and number of samples. Drawing 1 shows the locations of each of the WMUs designated for closure. All soil sampling and waste handling activities will be performed consistent with the hand augering procedures detailed in section 2.4.1.

Soil samples will be collected 1 foot below the WMUs. Physical removal of the concrete structure or, in the case of the larger clarifiers, removal of portions of the base of the structure will be required to enable hand augering and sample collection. Each sample will be collected as near to the center of the former structure as is practical and within health and safety guidelines.

4 ABOVE-GROUND STORAGE TANK CLOSURE

Closure sampling of AGT locations will be based on the "observational method" of assessing if there has been a release from an AGT. Step one will be to observe the closure and removal of the tanks and the condition of the containment area and concrete. Each containment area, upon removal of the tanks, will be assessed separately to determine if there was a release that could have penetrated the concrete. Each area will be marked and checked as the concrete is removed. The second step will involve visual inspection of the soils directly underneath the concrete after it has been removed. Areas that are stained or exhibit any odor will be sampled for analytes consistent with what was contained in the AGTs within the bermed area. In addition, those areas identified which may have acted as conduits through the concrete will be sampled, if a release is indicated by the soil condition. Table 2 presents the proposed AGT area soil sampling and analysis plan. At a minimum, one sample for every 1,000 square feet of containment area will be collected for analysis of those constituents contained in the AGTs. Samples collected as part of the minimum program will be uniformly distributed throughout the AGT containment area. At a minimum, two (2) soil samples will be collected from each AGT containment area as shown on Drawing 1. The containment area for tanks 47 through 50 will not be sampled, because these tanks will remain as part of the storm water management system. The areas associated with tanks 73 through 87 will also not be sampled, because these tanks are one or more stories above the building floor and are part of the building superstructure.

Closure sampling of the AGT areas will be performed according to the sampling and analysis plan outlined in Table 2. Up to 25 closure samples will be submitted to a stationary laboratory for analyses on a 10-day turnaround basis.

5 CLOSURE REPORT

Following the completion of field activities and the receipt of all analytical results, the data will be evaluated. A comprehensive closure report documenting the work performed will be prepared and will include the following:

- A complete summary of site investigation and remediation activities to date
- Descriptions of field procedures
- Boring logs
- Revised and updated surveyed site drawings and figures
- Results of chemical analyses of soil and groundwater samples including copies of the certified analytical reports and chain-of-custody documentation
- A discussion of findings and conclusions

A draft copy of the comprehensive closure report will be submitted to Dial and Quantum for review and comment. After receipt and incorporation of their comments, EMCON will finalize the report and submit it to the RWQCB.

The results of the initial monitoring event of groundwater wells MW-11 through MW-13 will be included as part of the semiannual groundwater monitoring program. Separate groundwater monitoring reports containing gradient maps, descriptions of the sampling procedures, well data, certified analytical laboratory reports, and a discussion of the results will be prepared and submitted to the RWQCB.

6 SCHEDULE

EMCON is prepared to implement the scope of work for facility closure upon approval of the workplan by the RWQCB. The program for additional assessment and closure of the WMUs and AGTs will be performed according to the schedule outlined in Figure 3. Each activity and reporting deadline may be affected by factors such as the progress of site demolition and location accessibility. The RWQCB will be kept apprised of changes in the sampling schedule and will be notified a minimum of 72 hours in advance of sampling operations.

7 REFERENCES

EMCON, August 1992, Phase II - III Assessment Report, The Dial Corporation - Main Facility, 9300 Rayo Avenue, South Gate: EMCON, Burbank, California.

EMCON, April 1993, Phase IV Assessment Report, The Dial Corporation - Main Facility, 9300 Rayo Avenue, South Gate: EMCON, Burbank, California.

EMCON, May 20, 1996, Response to RWQCB February 13, 1996, Review Letter: The Dial Corp - Main Facility, 9300 Rayo Avenue, South Gate: EMCON, Burbank, California.

EMCON, February 1996, Remediation Progress Update (December, 1995), Former Dial Corp - 9300 East Rayo Avenue, South Gate: EMCON, Burbank, California.

RWQCB, February 13, 1996, Former Dial Facility - Main Area - 9300 Rayo Avenue, South Gate (File No. 95-066: California Regional Water Quality Control Board, Los Angeles, California.

TABLES

TABLE 1
Sump, Clarifier, and Drain Sampling Plan

The Dial Corporation
Main Facility, South Gate

Reference Letter	Locations	Previous Sampling Points	Previous Analysis	Proposed Closure Analysis	Number of Samples
SUMPS					
A	Pump sump next to Bldg. 2 bleach tank	B-3	TPH-FC and pH	None ✓	0
B	Polydrum sump north of Bldg. 2 lab.	B-4	TPH-FC, Form., VOCs, pH, and phenol	None ✓	0
C	Sump east of Bldg. 4 and old cooling tower	B-11	pH and Cr	ammon. ✓	1
D	Drain sump by Bldg. 15	B-13	TPH-FC and Form.	TPH-FC and VOCs ✓	2
E	Alkane unloading sump	B-15, B-22, B-24, B-42 and H-1	TPH-FC	None ✓	0
F	Storm water sump north of Bldgs. 6 and 7	B-18	TPH-FC, pH, phos., and chlor.	None ✓	0
G	Sump west of Bldg. 8	B-17	pH	None ✓	0
H	Sump east of Bldg. 1	None	None	chlor. ✓	1
I	Southern sump next to Bldg. 2 chlorine tank	None	None	chlor. ✓	1
J	Soda ash loader sump between Bldgs. 4 and 8	None	None	pH ✓	2
K,L,M	Bldg. 5 sumps	None	None	pH and MBAS ✓	3
N	Sump north of AST farm weigh station	None	None	pH, chlor., ammon., ✓ and TPH-FC MBAS	1
O	Sump south of AST farm weigh station	None	None	pH, chlor., ammon., ✓ and TPH-FC	1
P	Sump inside Bldg. 8	None	None	pH, chlor., ammon., ✓ and TPH-FC	1
CLARIFIERS					
Q	Clarifier between Bldgs. 2 and 14	B-1	PCBs, TPH-FC, Form., VOCs, pH, Cr, phos., and chlor.	VOCs ✓	2
R	Clarifier near south gate	B-9	TPH-FC and pH	Not scheduled for closure ✓	
S	Clarifier near storm water retention tanks	B-14	PCBs, TPH-FC, VOCs, and pH	Not scheduled for closure ✓	
T	Clarifier southeast of Bldg. 15	B-13	TPH-FC and Form.	VOCs and TPH-FC ✓	2
U	Clarifier east of Bldg. 8	None	None	pH, chlor, ammon., ✓ and TPH-FC	2

drill outside area.

TABLE 1
Sump, Clarifier, and Drain Sampling Plan

The Dial Corporation
Main Facility, South Gate

Reference Letter	Locations	Previous Sampling Points	Previous Analysis	Proposed Closure Analysis	Number of Samples
DRAINS					
V	Trench drain between Bldgs. 1 and 14	B-2 and B-1	pH, Cr, phos., chlor. PCBs, TPH-FC,and Form.	chlor., ammon., VOCs, and Form.	4
W	Drain east of Bldg. 8	B-25	PCBs,TPH-FC, Form., VOCs, and pH	None	0
X	Drain east of Bldg. 4 and old cooling tower	B-11	pH and Cr	ammon.	1
Y	Storm drain near south gate	None	None	VOCs and pH	1
Z,A1,B1,C1	Storm drains outside of Bldg. 6	None	None	TPH-FC, pH, chlor., and MBAS	4
D1,E1	Storm drains southwest of Bldg. 1	None	None	chlor. and pH	2
F1,G1,H1	Storm drains north of Bldg. 7	None	None	MBAS and pH, phosphate	3
I1	Bldg. 5 floor drain	None	None	MBAS and pH	5
J1	Bldg. 8 trench drain	None	None	TPH-FC, ammon., pH, and chlor.	3
K1	Storm drain east of Bldg. 14	None	None	chlor. and pH	1

Notes:
TPH-FC = Total Petroleum Hydrocarbons (Fuel Characterization) analyzed using U.S. EPA Method 8015 Modified.
Form. = Formaldehyde analyzed using Method NCASI 487.
VOCs = Volatile Organic Compounds analyzed using U.S. EPA Method 8010 or 8260.
phenol. = Phenolphthalein screen.
Cr = Total chromium analyzed using U.S. EPA Method 7190.
phos. = Phosphates analyzed using U.S. EPA Method 300.
chlor. = Chlorides analyzed using U.S. EPA Method 300.
MBAS = Methylene Blue Activated Substances analyzed using U.S. EPA Method 425.1.
ammon. = Ammonia analyzed using U.S. EPA Method 350.3 (Nitrogen - Ammonia-N).
PCBs = Polychlorinated biphenyls analyzed using U.S. EPA Method 8080.

TABLE 2
AGT Area Soil Sampling Plan

The Dial Corporation
Main Facility, South Gate

Area*	Number of Samples	Sample Depth (ft.)	Analyses**	Location
I	2	3	1	Chloramide System
II	2	3	2,3	Raw Material Storage
III	2	3	2	Raw Material Storage
IV	6	3	1,2,4	Building 8 - Sulfonation Area
V	6	3	1,2,4,5	Detergent Area
VI	2	3	1,2	Silo Storage
VII	5	3	5	Product Storage

* Refer to Drawing 1

**Analyses:

1. United States Environmental Protection Agency (USEPA) Method 300.0 Chloride
2. USEPA Method 150.1 pH
3. USEPA Method 350.3 Nitrogen - Ammonia-N
4. USEPA Method 418.1 TRPH
5. USEPA Method 425.1 MBAS (surfactants)
6. USEPA Method NCASI 487 Formaldehyde

TABLE 3
Assessment Soil Sampling Plan

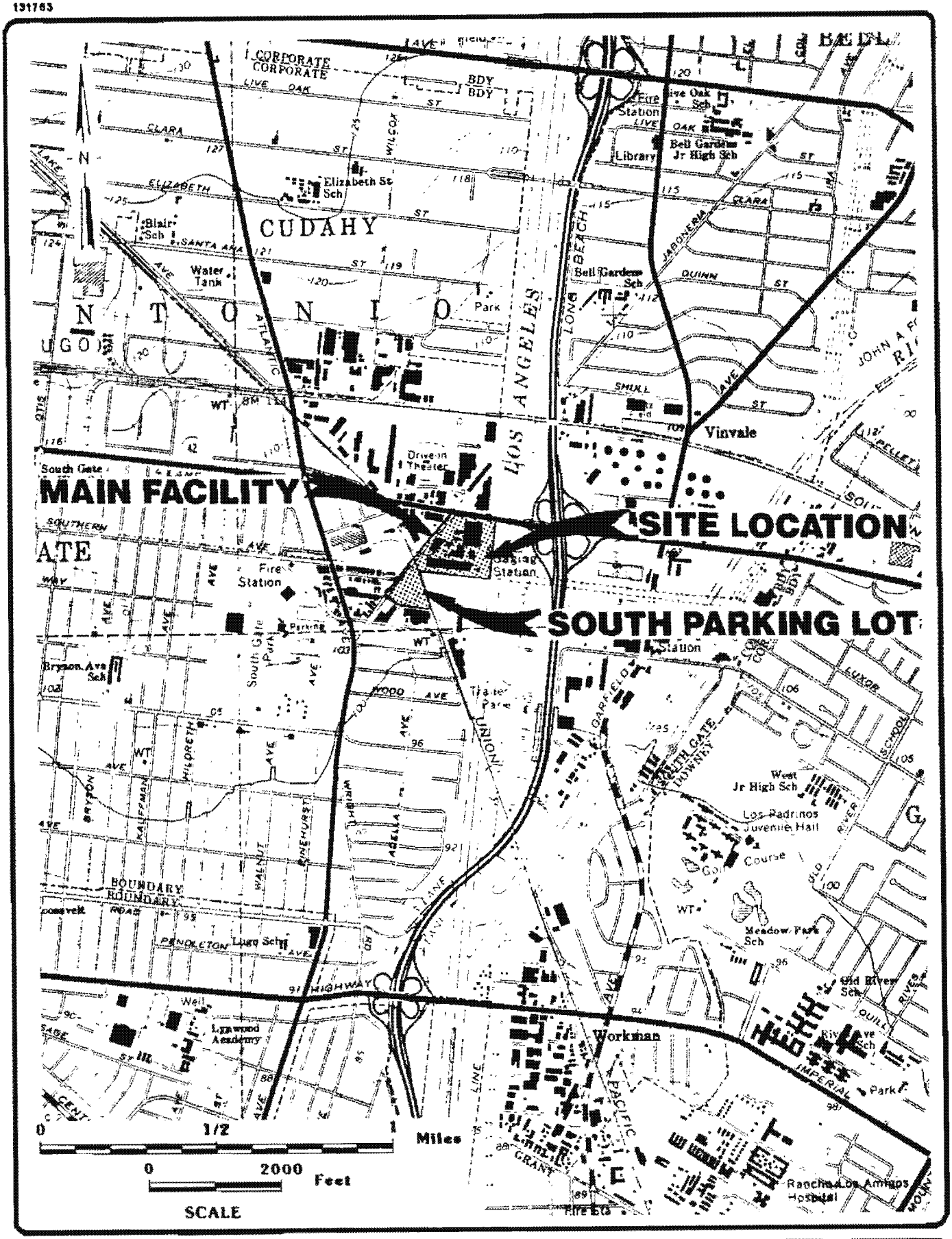
The Dial Corporation
Main Facility, South Gate

Boring	Number of Samples	Sample Depth (ft.)	Analyses**	Location
HA-1	1	5	1,2	Former 100-gallon gas tank north of former Building 3
HA-2	1	3	4	Lube oil storage area inside Building 6
HA-3	1	5	4	Stained area adjacent to south wall inside Building 6
HA-4	1	5	4	Stained area adjacent to south wall inside Building 6
HA-5	1	5	4	Stained area adjacent to south wall inside Building 6
HA-6	1	5	4	Stained area in office space inside Building 6
HA-7	1	5	1	Alkane oil tank 0223
HA-8	1	5	1	Fuel oil tank 0224
HA-9*	1	5	3	Drum fluid dispensing area outside Building 2
HA-10*	1	5	5	Caustic unloading area north of Building 6
EB-1	10	5 - 50	1,2,3,4	Clarifier near south site gate and well MW-3
EB-2	3	5 - 50	10,11,12	Alkylate unloading area
EB-3	3	5 - 50	10,11,12	Alkylate unloading area
CB-1	10	5 - 50	1,2,3	Former UST area adjacent to the former garage and lab
CB-2	10	5 - 50	1,2,3	Former UST area adjacent to the former garage and lab
CB-3	10	5 - 50	1,2,3	Former UST area adjacent to the former garage and lab

HA = Hand Auger Boring
EB = Exploratory Soil Boring
CB = Confirmatory Soil Boring
* = Indicates soil boring based on RWQCB request for additional analyses
** Analyses:
1. United States Environmental Protection Agency (USEPA) Method 8015M FC Hydrocarbon Scan
2. USEPA Method 8020 BTEX
3. USEPA Method 8010 VOCs
4. USEPA Method 418.1 TRPH
5. USEPA Method 150.1 pH
6. USEPA Method 425.1 MBAS (surfactants)
7. USEPA Method NCASI 487 Formaldehyde
8. USEPA Method 300.0 Chloride
9. USEPA Method 350.3 Nitrogen - Ammonia-N
10. ASTM D2937 Moisture Content and Dry Unit Weight
11. ASTM D5084; USEPA 9100 Vertical Permeability
12. USEPA Method 415.1/9060 TOC

FIGURES

191763



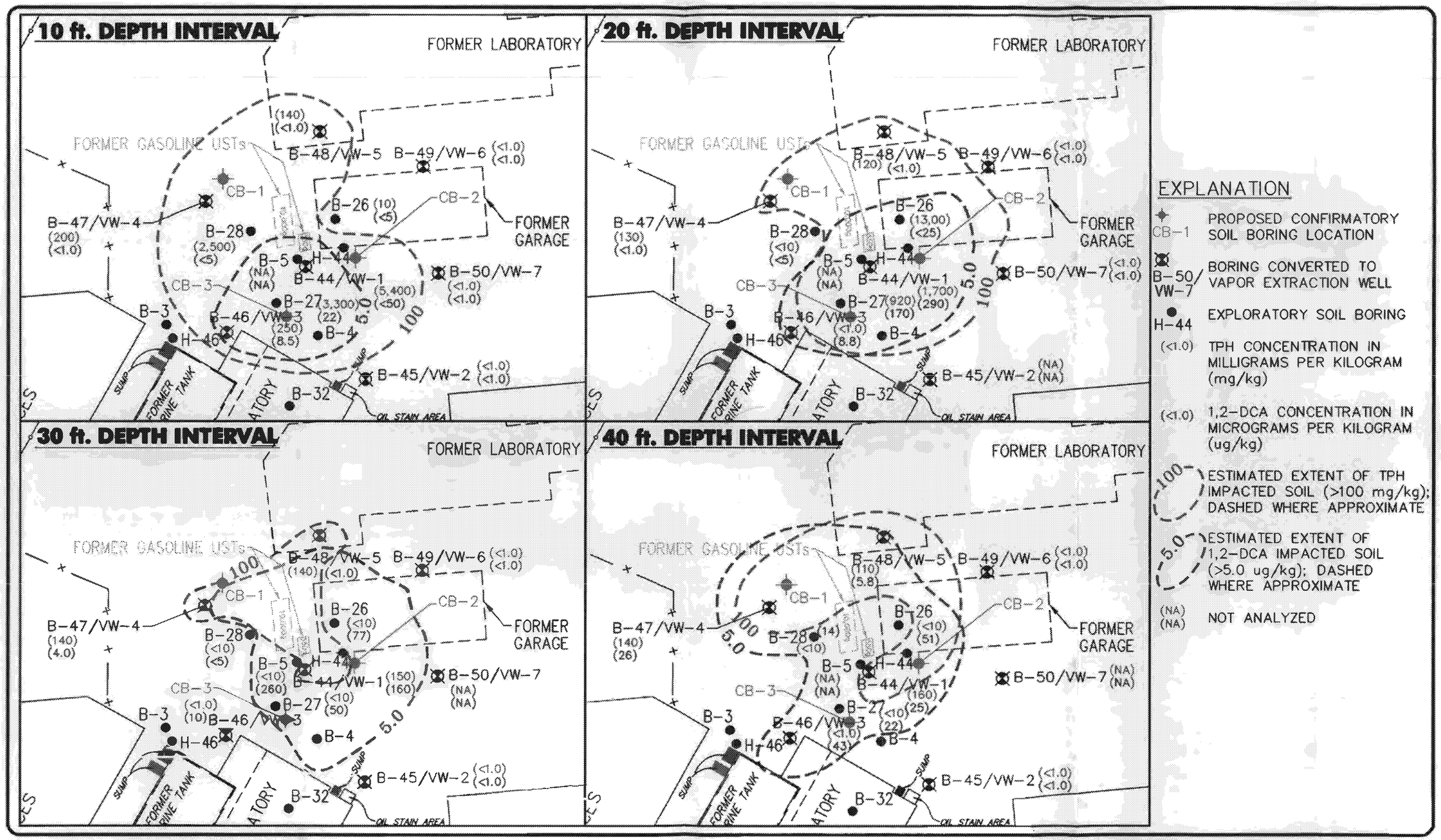
EMCON

THE DIAL CORPORATION
9400 RAYO AVENUE
SOUTH GATE, CALIFORNIA

SITE LOCATION MAP

FIGURE
1

PROJECT NO.
20H93-001.07



EMCON

0 25 50 FEET
SCALE

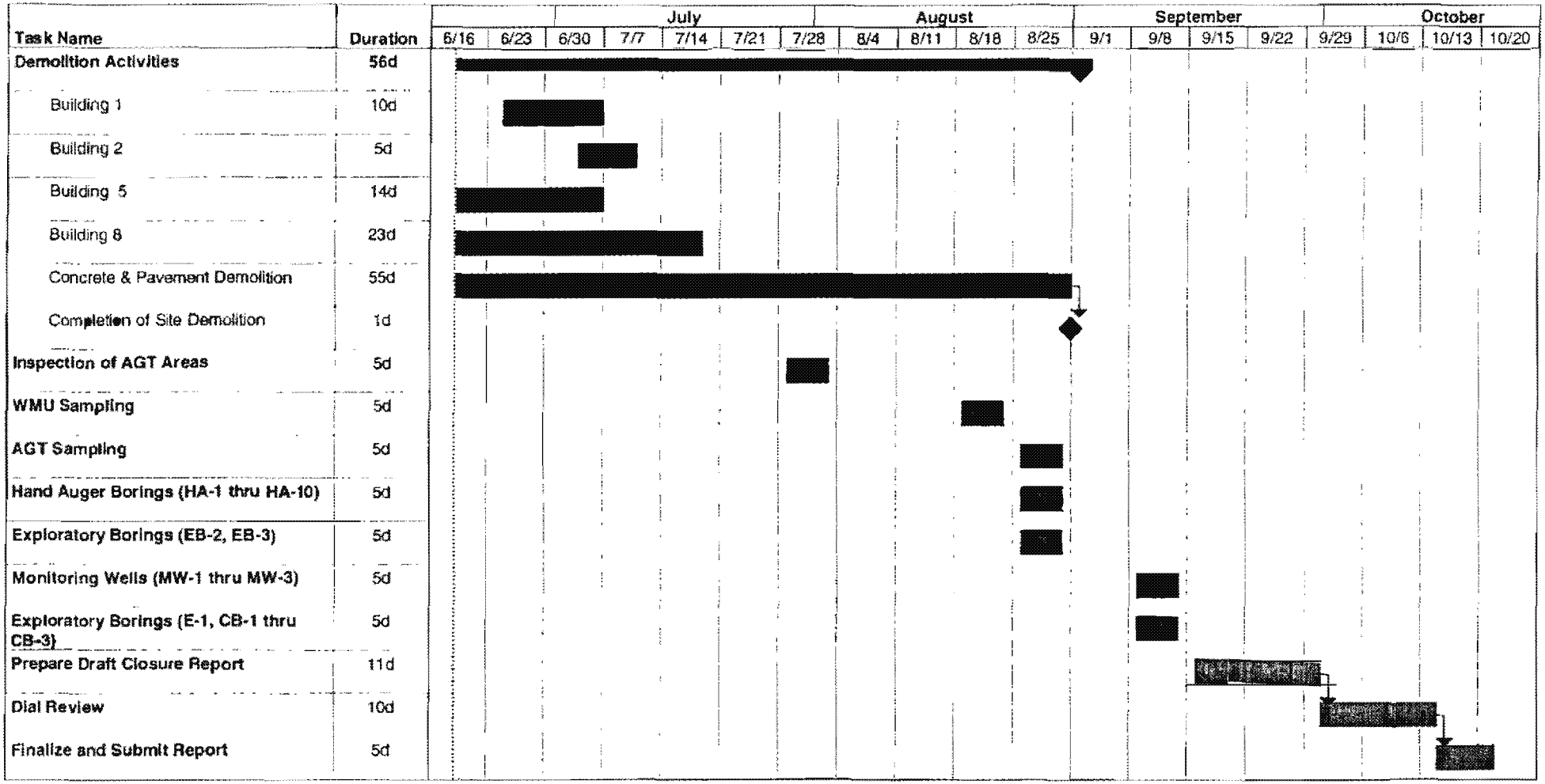
THE DIAL CORPORATION
MAIN FACILITY
9300 RAYO AVENUE
SOUTH GATE, CALIFORNIA

PROPOSED CONFIRMATORY SOIL BORING LOCATIONS CB-1 THROUGH CB-3

FIGURE
2
PROJECT NO.
20H93-001.006

CADD FILE: CSB1-3
DATE LAST REVISED: 06/19/98

FIGURE 3
Proposed Assessment and Closure Sampling Schedule
Dial Main Facility, South Gate



Project: Site Demolition, Assessment, and Closure Sampling
Date: 6/19/96

Task: Progress: Milestone: Summary:

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PRINT DATE 6/19/96

ATTACHMENT A

HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN
DIAL CORPORATION MAIN FACILITY
9300 RAYO AVENUE
SOUTH GATE, CALIFORNIA

July 3, 1996

Prepared by

EMCON
3300 North San Fernando Boulevard
Burbank, California 91504

Project 20H93-001.006

Diana Buchanan, R.G.
Project Manager

7/3/96
Date

Brian O. Primeau, R.E.A.
Regional Health & Safety Coordinator

7/3/96
Date

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1 INTRODUCTION AND SCOPE

1.1 Introduction

This Health and Safety Plan (HASP) was developed to protect worker health and safety during investigations at the Dial Corporation Main Facility at 9300 Rayo Avenue, South Gate, California.

The proposed work involves the following tasks:

- Drill and sample three (3) soil borings to 50 feet below ground surface (bgs) near the former gasoline storage tanks
- Install, develop, and sample three 4-inch diameter PVC monitoring wells to 70 feet bgs near the former maintenance and laboratory building
- Drill and sample three (3) soil borings to 50 feet bgs. One boring will be near the clarifier at the south site gate, and two will be placed near the alkylate unloading sump.
- Hand auger ten (10) borings to 3 or 5 feet bgs near former industrial processes
- Hand auger to one foot bgs beneath waste management units, following demolition
- Collect samples from beneath the aboveground storage tanks, following demolition

The complete scope of work for this project is contained in the workplan (EMCON, July 1996).

1.2 Organization

This HASP is organized as follows:

Section 1: Introduction

Section 2: Key Personnel

Section 3: Chemical Hazards

Section 4: Physical Hazards

Section 5: Standard Air Monitoring Plan

Section 6: Standard Worker Protection

Section 7: Standard Decontamination Procedures

Section 8: Training Requirements

Section 9: Task Specific Safety Requirements

1.3 Scope

This Health and Safety Plan (HASP) was developed to protect workers and the general public at the Dial Corporation main facility during site investigation activities. The HASP is based on current Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1910.120), current California regulations (8 CCR 5192), and an evaluation of existing data derived from previous assessment activities. This document is only intended as an aid to employees who perform the tasks identified in this HASP. A risk assessment and discussion of task specific safety procedures is included in Section 9 of this document.

1.4 Site Identification

The Dial Corporation Main Facility is located at 9300 Rayo Avenue, South Gate, California, as shown on Figure 1. The facility has been closed. Access is restricted by fencing and locked gates.

1.5 Site Background

Phase I activities were completed at the site in December 1991 to identify areas of potential environmental concern. Based on the Phase I results, EMCON completed Phase II through IV site assessment activities by April 1993 to further define areas of potential environmental concern.

Soil borings were drilled at the Main Lot in three types of localities:

- shallow borings (approximately 3 feet deep) in areas with surface staining
- borings (up to approximately 15 feet deep) adjacent to sumps and clarifiers

- deeper borings (up to approximately 50 feet deep) adjacent to current and former underground storage tank locations

Areas identified with impacted soils include:

- the Former Storage Tank Area (TPH and VOCs)
- the Alkylate Unloading Area (dodecylbenzene)
- the Building 8 Former Fuel Tank (TPH)

1.5.1 Former Storage Tank Area and Old Garage

Three phases of site assessment activity have been conducted in the area of the former storage tanks and the old garage (EMCON, August 5, 1992; April 9, 1993). Thirteen exploratory soil borings were drilled to depths of approximately 50 to 75 feet bgs in the old garage area to assess the lateral and vertical extent of petroleum hydrocarbons and VOCs. TPH were detected at concentrations up to 13,000 mg/kg in soil samples collected from these borings at depths between 10 and 40 feet bgs. The VOCs 1,2-dichloroethane (1,2-DCA) and chloroform were reported at concentrations up to 290 and 360 µg/kg, respectively, in soil samples collected at depths between 10 and 50 feet bgs (EMCON, April 9, 1993). Seven of the 13 exploratory borings drilled in the old garage area were converted to vapor extraction wells and vapor extraction well nests.

Dial voluntarily initiated remedial action activities to mitigate BTXE- and VOC-impacted soil in the area of the old garage using the network of seven vapor extraction wells. An initial long term vapor extraction test was conducted from October to December 1993. Over that period approximately 12,848 pounds of hydrocarbons were removed. The influent hydrocarbon concentration to the emissions control equipment dropped from 36,000 parts per million by volume (ppmv) reported in the sample collected in late September 1993 to 4,200 ppmv reported in the November 1993 sample. VOCs were not reported above method reporting limits in the influent samples collected during operation of the vapor extraction system.

The vapor extraction program was reinitiated in January 1995, using a 250 scfm thermal/catalytic oxidizer and the existing well field around the old garage. Approximately 21,427 pounds of hydrocarbons have been removed from January to December 1995. A total of 34,275 pounds of volatile hydrocarbons have been removed by both phases of the VES. Benzene concentrations declined from 52 ppmv in January to 2 ppmv in July 1995. Recent influent vapor samples to the system did not contain measurable concentrations of benzene. On the basis of declining volatile hydrocarbon concentrations from the VES and an absence of benzene in the extracted vapor, the VES was shutdown in December, 1995.

Based on a short term respirometry test in early December 1995, it appears that insitu biodegradation of hydrocarbons by indigenous bacteria is occurring. Increased levels of

CO2 and decreased levels of oxygen were measured in wells that have historically produced the highest vapor concentrations.

1.5.2 Alkylate Unloading Sump Area

Hydrocarbon impacted soils were detected adjacent to the sump. Based on information provided by Dial, the compound present in these soils is thought to be dodecylbenzene, a product used in the manufacture of detergents. The dodecylbenzene-impacted soil has been characterized as nonhazardous waste according to the California Code of Regulations, Title 22. The extent of the impacted soil has been delineated in the area of the former unloading sump.

1.5.3 Building 8 Former Fuel-Oil Tank

Diesel-impacted soils were detected adjacent to the former fuel-oil tank. Based on the shallow depth EMCON completed a Leaking Underground Fuel Tank (LUFT) Risk Assessment and General Risk Appraisal, according to the California State Water Board LUFT Manual guidelines. Based on this assessment impacted soils could be left in-place and not threaten shallow groundwater.

1.5.4 Groundwater

A total of five groundwater monitoring wells were installed on site to characterize groundwater conditions beneath the site. Two additional wells were installed off site and upgradient to characterize groundwater quality entering the site.

During a previous site assessment conducted in September 1992, groundwater samples collected from wells MW-6 and MW-7 contained benzene concentrations of 5.8 and 10 µg/L, respectively. Benzene was not reported in groundwater samples collected in September 1992 from upgradient well MW-1 or downgradient well MW-2. VOCs were not reported in groundwater samples collected from these wells in September 1992. Beginning in April 1992, Dial initiated semi-annual sampling and monitoring of wells MW-1, MW-2, MW-6, and MW-7. Recently, the RWQCB concurred with an EMCON conclusion that there is an offsite source for the chlorinated aliphatic hydrocarbons beneath the South Parking Lot and Main Area.

In the groundwater samples collected from wells MW-2, MW-6, and MW-7, several VOCs were reported slightly above laboratory method reporting limits. With the exception of 1,2-DCA, of the VOCs detected in the groundwater samples from these wells, none of the concentrations reported were above State Maximum Contaminant Levels (MCLs) for drinking water. Of the previously reported VOCs, (1,1-DCA, 1,2-DCA, TCE, 1,2-DCP and 1,2-DCE), in groundwater samples collected from wells MW-2, MW-6, and MW-7, concentrations have generally been stable since April 1992 sampling event. Benzene is the only petroleum aromatic compound that has been reported in groundwater samples from wells MW-2, MW-6, and

MW-7 at concentrations above State drinking water MCLs. The concentration of benzene in groundwater samples from wells MW-6 and MW-7 is showing a decreasing trend. in part due to the source removal program in the "old garage area".

2 KEY PERSONNEL AND ASSIGNMENT RESPONSIBILITIES

2.1 Project Manager

The project manager for this project is Diana Buchanan. The project manager has the overall project responsibility for the development, coordination, and implementation of the project field work in a safe manner and is the central point of contact with regulatory agencies. The project manager is responsible for implementing the steps of the closure workplan and the HASP, as well as supervising the field team members. In addition, he or she is responsible for consulting with the health and safety coordinator and with the site safety coordinator regarding any changes that may affect the health and safety of the field team members.

2.2 Regional Health and Safety Coordinator

The regional health and safety coordinator for the investigation is Brian Primeau. The health and safety coordinator has the overall responsibility for the development, coordination, and implementation of the HASP and its conformance with EMCON's health and safety program. This includes the medical surveillance program, training requirements, monitoring procedures, etc. The health and safety coordinator shall work with the project manager and the site safety coordinator on modifications to the site HASP and will be available for consultation as necessary.

2.3 Site Safety Coordinator

The site safety coordinator (SSC) is responsible for ensuring compliance with the site HASP, including health and safety procedures for work sites, monitoring and recording of conditions, personal protective equipment and clothing, and consulting with the health and safety manager regarding the HASP.

2.4 Field Personnel

Field personnel are responsible for understanding and adhering to this HASP, and should also be alert to any unsafe conditions or practices which may affect their safety. Any safety deficiencies will be communicated to the site safety coordinator. If personnel safety is threatened the site safety coordinator, project manager, or health and safety manager will be contacted immediately.

2.5 Subcontractors and Third Parties

Equipment operators, laborers, and other parties subcontracted by EMCON will be responsible for understanding and complying with all site safety requirements. EMCON will provide air monitoring and establish decontamination areas. However, subcontractors and third parties engaged in work at this site will be required to provide their own work equipment and personal protective gear. Subcontractors will also be required to provide EMCON with documentation that their employees have completed the OSHA-required 40-hour training program (and the annual refresher course, if appropriate) prior to working on this project.

3 CHEMICAL HAZARDS

Previous investigations have documented the existence of low levels of petroleum hydrocarbons and VOCs in the soil on the property. VOCs have also been detected in groundwater samples. Potential chemicals of concern in fuel hydrocarbons include benzene, toluene, ethylbenzene, and xylenes. Any concentrations encountered are expected to be very low levels adsorbed onto soil grains; no free product is expected to exist on this site.

Potential worker exposure to these chemicals could occur through inhalation, ingestion, or absorption. Ingestion and absorption will be controlled through the use of personal protective clothing and decontamination procedures. Inhalation hazards will be controlled through the use of engineering controls and respiratory protection.

3.1 Health Effects

Table 3-1 summarizes the known health effects of the chemicals encountered at this site. The table includes significant routes of exposure, health effects, and target organs for pure forms of the chemicals encountered on site. All exposures are expected to be to low concentrations of the chemical substance either adhered to soil grains or dissolved in groundwater.

The current occupation inhalation exposure levels for the detected chemicals are also shown on Table 3-1. These levels will be used to determine when workers are being exposed to airborne concentrations that may lead to adverse health effects. If these concentrations are exceeded, engineering controls will be implemented to reduce employee exposure. If exposure continues above these levels, employees will be provided with respiratory protection.

Table 3-1 Health Effects

Substance	Cal/OSHA PEL-TWA	NIOSH IDLH Limits	Cal/OSHA PEL-STEL	Cal/OSHA CEILING	Routes of Exposure	Acute Health Effects/Signs and Symptoms
Benzene (soil near former gas tank and groundwater)	1 ppm	500 ppm	5 ppm	N/A	Inhalation, ingestion, skin absorption	Respiratory, skin, eye and mucous membrane irritation. Nerve inflammation, CNS depression, and cardiac sensitization. Dizziness, euphoria, headache, nausea, drowsiness, lung tissue fluid build-up, pneumonia, convulsions, and paralysis.
Chloroform (groundwater)	2 ppm	500 ppm	N/A	N/A	Inhalation, ingestion skin absorption	Eye and skin irritation; dizziness; mental dullness; nausea, confusion; headache, fatigue, anesthesia, enlarged liver
1,2-Dichloroethane (Ethylene Dichloride) (soil and groundwater)	1 ppm	50 ppm	2 ppm	20 ppm	Inhalation, ingestion skin absorption	Eye irritation; corneal opacity; CNS depression; nausea, vomiting; dermatitis; liver, kidney, CVS damage.
1,1-Dichloroethane (groundwater)	100 ppm	3,000 ppm	N/A	N/A	Inhalation, ingestion skin contact	Skin irritation; CNS depression; liver, kidney, lung damage.
1,1-Dichloroethylene (groundwater)	200 ppm	1,000 ppm	N/A	N/A	Inhalation, ingestion skin absorption	Eye and respiratory system irritation; CNS depression.
1,2-Dichloropropene (groundwater)	75 ppm	400 ppm	110 ppm	N/A	Inhalation, ingestion skin absorption	Eye, skin, and respiratory system irritation; drowsiness; liver, kidney damage
Dodecylbenzene (Alkylate unloading area)	N/A	N/A	N/A	N/A	Inhalation, ingestion skin absorption	SEE SECTION 3.2
Ethylbenzene (soil near former gas tank)	100 ppm	2,000 ppm	125 ppm	N/A	Inhalation, skin absorption, ingestion	Eye, skin, and respiratory tract irritation; peculiar skin sensation of numbness or pins-and-needles feeling; fatigue, headache, weakness, dizziness, drowsiness, and confusion; difficulty seeing in bright light.
Gasoline (soil near former gas tank)	300 ppm	N/A	500 ppm	N/A	Inhalation, ingestion, skin absorption	Irritate eyes, skin, mucous membranes; dermatitis; headache, fatigue, blurred vision; slurred speech; confusion; convulsions; possible liver, kidney damage
Toluene (soil near former gas tank)	50 ppm	2,000 ppm	150 ppm	500	Inhalation, skin absorption, ingestion	Eye, skin, and respiratory tract irritation; peculiar skin sensation of numbness or pins-and-needles feeling; fatigue, headache, weakness, dizziness, drowsiness, and confusion; difficulty seeing in

Substance	Cal/OSHA PEL-TWA	NIOSH IDLH Limits	Cal/OSHA PEL-STEL	Cal/OSHA CEILING	Routes of Exposure	Acute Health Effects/Signs and Symptoms
						bright light.
Trichloroethylene (TCE) (groundwater)	25 ppm	1,000 ppm	200 ppm	300 ppm	Inhalation, ingestion skin absorption	Eye and skin irritation; headache, vertigo; visual distortion; fatigue, giddiness; tremors, sleepiness, nausea, vomiting; dermatitis; cardiac arrhythmias; liver injury
Xylenes (soil near former gas tank)	100 ppm	1,000 ppm	150 ppm	300	Inhalation, ingestion skin absorption	Eye, nose, or throat irritation; sever breathing difficulty (can be a delayed effect); dizziness, staggering, drowsiness, and unconsciousness; loss of appetite, nausea, vomiting, and abdominal pain.

NOTES ON TABLE 3-1

N/A Not Available
TWA Time Weighted Average
STEL Short Term Exposure Limit
IDLH Immediately Dangerous to Life or Health
Ceiling - Ceiling Limit

REFERENCES

1. California Code of Regulations, Title 8, Section 5155.
2. National Institute for Occupational Safety and Health, 1994. Pocket Guide to Chemical Hazards, DHHS (NIOSH) Publication

3.2 Dodecylbenzene

Dodecylbenzene (DDB) is a detergent alkylate consisting of predominantly monoalkyl benzenes. Toxicological data is not available in the general literature for this material. One study on DDB (an oral rat study) is available (Clayton and Clayton, 1982, as cited in HSDB, 1996). This study indicated that no deaths were reported at 5,000 milligrams per kilogram (mg/kg), the highest concentration applied. Health effects are anticipated to be similar to ethylbenzene and toluene, which have similar chemical structures.

Exposure to DDB will be kept to a minimum by using appropriate protective equipment, consisting of chemical resistant gloves, to handle potentially contaminated soil samples in the alkylate unloading area.

3.3 Chronic Effects

Chronic exposure to benzene, chloroform, 1,2-DCA, and TCE have been indicated to cause cancer in mammals.

Chronic exposure to toluene is known to the State of California to result in reproductive problems in both men and women.

4 PHYSICAL HAZARDS

Physical agents that site workers can reasonable be expected to encounter, and mitigation measures to reduce effects of these agents, are discussed below.

4.1 Heat Stress

There is a potential for heat stress from the use of protective clothing and climate conditions. One or more of the following procedures may be employed to alleviate potential heat stress problems in the event that site conditions warrant the use of personal protective equipment (PPE), or ambient temperatures exceed 85 degrees F.

4.1.1 General Precautions

Provide plenty of liquids. To replace body fluids (water and electrolytes) lost because of sweating, use a 0.1 percent saltwater solution, more heavily salted foods, or commercial drink mixes. The commercial mixes may be preferable for those employees on a low-sodium diet. Ensure that adequate shelter is available for breaks to protect personnel against heat, which can decrease physical efficiency and increase the probability of accidents.

In extremely hot weather, conduct operations in early morning or evening and rotate shifts of workers wearing impervious clothing. Install mobile showers and/or hose-down facilities to reduce body temperature and cool protective clothing.

4.1.2 Heat Stress Monitoring

For monitoring the body's recuperative ability toward excess heat, one or more of the following techniques should be used as a screening mechanism. Monitoring of personnel wearing impervious clothing should commence when the ambient temperature is 70°F or above. Frequency of monitoring should increase as the ambient temperature increases or as slow recovery rates are indicated. When temperatures exceed 85°F Wet Bulb Globe Temperature (WBGT), regardless of the use of PPE, workers will be monitored for heat stress after every work period.

Good hygienic standards must be maintained by the employee to aid in the prevention of heat stress illnesses. Frequent change of clothing and daily showering at a minimum should occur with clothing being allowed to dry during rest periods. Persons who notice skin problems should immediately inform their supervisor.

- Heart rate (HR) should be measured by the radial pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 25 percent. The HR is then measured again, once each minute for 2 minutes, (a total of three measurements) after the initial rest period measurement. The HR should decrease by ten beats per minute between each measurement (a total reduction of 20 beats). If the HR does not decrease, the next work period should be reduced by 25 percent.

4.1.3 Effects of Heat Stress

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat loading, a number of physical reactions can occur. The severity of these reactions ranges from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement) to severe (fatal). Heat-related illnesses include:

- Heat rash (also known as prickly heat rash) is caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Heat rash decreases the ability to tolerate heat as well as being a nuisance. Signs are a red prickly-like rash. Employees exhibiting signs of heat stress will be directed to shower and change to clean, dry clothing.

- Heat cramps are caused by profuse perspiration with inadequate fluid intake and electrolyte replacement (especially salts). Signs are muscle spasms and pain in the extremities and abdomen and may occur several hours after work has stopped. Employees showing signs of heat cramps will be directed to lie in a cool, shady area, and drink cool fluids. If symptoms persist or worsen the employee will be transported to an emergency facility.

- Heat exhaustion is caused by increased stress on various organs to meet increased demands to cool the body. Signs are shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude. Employees with signs of heat exhaustion will be brought to cool, shady location and given fluids. If victim is unconscious, or conditions persist, the victim will be brought to a hospital.

- Heat stroke is the most severe form of heat stress. The body must be cooled immediately to prevent severe injury and/or death. Signs and symptoms are red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and/or coma. **HEAT STOKE IS A TRUE MEDICAL EMERGENCY.** The victim will be brought to a cool area, aggressively treated by removing constricting clothes and applying wet towels or ice packs, and transported without delay to an emergency facility.

4.2 Noise

The effects of noise include psychological effects (interference with communication by speech, job performance, and safety) and physiological effects such as temporary and permanent hearing loss. The factors that affect the degree and extent of hearing loss are intensity or loudness of the noise, type of noise, period of exposure each day, total work duration, and distance from the noise source. Cal/OSHA has promulgated maximum noise exposure values (Table 4-1) to protect workers.

There is a potential for exposure to loud noise associated with heavy equipment. To safeguard workers, all personnel will be provided with disposable earplugs when working with heavy equipment, such as around the drill rig. Previous monitoring studies by EMCON has shown that noise levels exceed 85 decibels within 15 feet of typical truck mounted drilling equipment. Any personnel within this range will be provided with hearing protection.

Table 4-1 Permissible Noise Exposure

Sound Level (dBA)	Hours - Minutes	Hours	Sound Level (dBA)	Hours - Minutes	Hours
90	8 - 0	8.00	103	1 - 19	1.32
91	6 - 58	6.96	104	1 - 9	1.15
92	6 - 4	6.06	105	1 - 0	1.00
93	5 - 17	5.28	106	0 - 52	0.86
94	4 -36	4.60	107	0 - 46	0.76
95	4 - 0	4.00	108	0 - 40	0.66
96	3 - 29	3.48	109	0 - 34	0.56
97	3 - 2	3.03	110	0 - 30	0.50
98	2 - 38	2.63	111	0 - 26	0.43
99	2 - 18	2.30	112	0 - 23	0.38
100	2 - 0	2.00	113	0 - 20	0.33
101	1 - 44	1.73	114	0 - 17	0.28
102	1 - 31	1.52	115	0 - 15	0.25

4.3 Blood-Borne Pathogens

Blood-borne pathogens refers to pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus, human immunodeficiency virus, Clostridium tetani (tetanus), and Clostridium perfringens (gas gangrene).

The only site personnel who might be exposed to this hazard under normal conditions is the Site Safety Officer, in the event he or she is required to render first aid to an injured worker while waiting for emergency personnel. The NIOSH doctrine of 'Universal Precautions' will apply to any potential exposure to bodily fluids that might occur as a result of an incident on this site. Procedures for Universal Precautions assume that all

bodily fluid is potentially infected with a pathogenic microorganism, and no contact with bodily fluids is allowed.

The safety officer will be equipped with a first aid kit that contains gloves, surgical mask, and safety goggles to be used whenever contact with bodily fluids is possible. The kit will also be equipped with a CPR mask that has a one-way valve in the event mouth-to-mouth resuscitation of a worker is required. Antibiotic cleansers will be included in the kit, as will special bags for the containment of medical waste.

4.4 Electrical Hazards

Potential for electrical injury to workers is possible at field work-sites. Caution should be exercised in using small portable electrical equipment and field monitoring equipment. Also be alert to buried and overhead electric lines when conducting any activities that disturb soil. Local "Dig Alert" and/or specific utility companies must be contacted and notified prior to any drilling/excavation activities. Workers should also be alert to locations of overhead utility lines and care should be exercised at all times not to disturb or come in contact with them. ASSUME ALL ELECTRICAL LINES ARE ENERGIZED unless a suitable lockout/tagout procedure has been employed to render the lines safe.

For overhead electrical lines, the minimum clearance to be maintained between the drill rig, hand auger sections, or any other equipment, and the electrical line is shown below:

Table 4-2

Minimum Safe Clearance

Nominal Voltage of Line	Minimum Clearance (feet)
up to 50,000	10
over 50,000 - 75,000	11
over 75,000 - 125,000	13
over 125,000 - 175,000	15
over 175,000 - 250,000	17
over 250,000 - 370,000	21
over 370,000 - 550,000	27
over 550,000 - 1,000,000	42

4.5 Fire or Explosion

Explosion or fire may occur where fuel, oxygen, and heat combine. The chemical contaminants identified to date for this site are low concentrations in soil, and are not expected to volatize enough to provide for an explosive environment. If the PID indicates organic vapors exceeding 1,000 ppm (0.1%), a combustible gas indicator will be brought

to the site to monitor for fire or explosion hazards. If the concentration exceeds 10% of the lower explosive levels (LEL), work will be stopped and the area evacuated until vapor concentrations are reduced.

Also, smoking by workers presents a potential for causing explosion or fire; therefore, no smoking is permitted at field work-sites.

4.6 Lifting Hazards

Field operations often require that physical labor tasks be performed. All employees should utilize proper bending and lifting procedures. Whenever an object is to be lifted, the employee should bend at the knees and lift the object using the legs. Additionally, an employee should not attempt to lift bulky or heavy objects (over 30 pounds) without assistance.

4.7 Lighting

All work for this project is expected to occur outdoors during normal daylight hours. In the event unforeseen conditions necessitate working indoors or at night, artificial illumination will be provided to illuminate the working area to at least five foot-candles. Workers will be provided with battery-powered flashlights in the event the general power source for the illumination fails.

5 AIR MONITORING PLAN

During the course of this investigation, the possibility exists that site workers will be exposed to airborne concentrations of the chemicals that have been detected at this facility. To protect workers, the following methods will be employed to measure the concentration of organic vapors in the work area.

5.1 Instruments

Decisions to upgrade or downgrade the protective equipment worn by workers at the site should be based on solid knowledge of the hazards present. To evaluate inhalation hazards, several direct reading instruments will be employed.

5.1.1 Photoionization Detector

Total Organic Vapor (TOV) concentrations at the site will be measured with a Photovac MP-100 or HL-200 Photo Ionization Detector (PID). The PID measures organic vapors by using an ultraviolet lamp to ionize organic compounds in the air stream. The ionized compounds are then measured and converted to a reading as parts per million of organic vapor in air.

The PID will be calibrated prior to the start of each shift using a field calibration standard gas. The PID will not respond to different organic vapors with the same sensitivity. Table 5-1 summarizes the compounds of concern, their ionization potentials, and the instrument response factor.

Table 5-1 PID Response

Substance	Ionization Potential (eV)	Response Factor*
Benzene	9.25	0.6
Chloroform	11.42	Not Available
1,1-Dichloroethane	11.06	N/A
1,2-Dichloroethane	11.05	Not Available
1,2-Dichloroethylene	9.65	Not Available
1,2-Dichloropropene	10.87	Not Available
Ethylbenzene	8.76	Not Available
Gasoline (n-heptane)	10.07	3.7
Toluene	8.82	0.5

Substance	Ionization Potential (eV)	Response Factor*
Trichloroethylene	9.45	1.2
Xylenes	8.56	Not Available

* Instrument calibrated to 100 ppm isobutylene with a 10.6 eV lamp.

5.1.2 Colorimetric Tubes

The concentrations of individual organic compounds can be quantified with colorimetric detector tubes. The detector tubes operate by drawing a fixed amount of the air to be sampled through a glass tube, where it reacts with a reagent and produces a stain that can be read as concentration in air. It is important to read the instructions for each different tube prior to use, as cross contamination is often encountered.

The pump should be checked for leaks before each use by inserting a sealed tube and squeezing the bellows. If the pump holds pressure for one minute, no leaks are present. If the pump leaks it must be replaced. Break the tips off the appropriate tube, and follow the package instructions on how to obtain a sample.

Periodic monitoring for benzene will commence when the OVA indicates persistent breathing zone vapors in excess of 1 ppm over the background level.

5.2 Action Levels

Measured concentrations of particulates and organic vapors will be entered onto an air monitoring form included in Appendix A. If the concentrations of various chemicals exceed the PEL, mitigation measures will be instituted. Mitigation measures will include engineering controls such as increased dust control practices using water spray, reducing dust-or vapor-generating activities, using explosive-proof fans to disperse vapors, and work slow-downs. The monitoring frequency will then be increased to verify that the engineering controls are sufficient. If engineering controls do not reduce the measured concentrations below the Action Levels, site personnel will be equipped with suitable respiratory protection.

For TOV levels as measured by the PID, the following action levels will be adhered to:

Table 5-2 TOV Action Levels

TOV in the breathing zone	Response
30 ppm	No respiratory protection mandated
31 - 100 ppm	Minimum of 1/2 Face Air Purifying Respirator (APR) with dust/mist prefilter and Organic Vapor cartridges. Maximum

	Protection Factor = 10 x PEL.
101 - 500 ppm	Minimum of Full Face Air Purifying Respirator (APR) with dust/mist prefilter and Organic Vapor cartridges. Maximum Protection Factor = 50 x PEL.
Over 500 ppm	Positive Pressure supplied-air device.

This table is based on 1/3 of the PEL for gasoline, and a PID response factor of 100%. As the action level is reduced to 1/3 of the PEL, and the response factor for gasoline is actually 370%, these levels represent a significant safety factor. The site safety coordinator must review these action levels if evidence becomes available of other substances being present.

Note that this table is superseded if, at any time, a detector tube indicates that a substance is present at or above its PEL, after taking into account the accuracy of the tube as stated in its instructions.

5.3 Personnel Responsibilities

The Health and Safety Coordinator (HSC) and the Site Safety Officer (SSC) shall be responsible for determining whether additional exposure monitoring/sampling is needed to supplement the equipment and methods described above. A revised sampling plan will then be developed by the HSM and implemented by the SSC.

The SSC shall ensure that appropriate air monitoring equipment is available for use prior to the start of any work. The SSC will perform site air monitoring during the course of the project. The SSC shall also ensure that monitoring instruments are used only by persons who have had prior training and experience in their operation, calibration and care, and who understand their limitations. The SSC shall also ensure that the instruments are properly calibrated and recharged regularly, and that the proper operation of the instruments are checked daily. Calibration data should be included on the form in Appendix A.

6 STANDARD WORKER PROTECTION

This section identifies the methods that will be implemented by EMCON to reduce worker exposure to the chemical and/or physical hazards identified at this project location. Protective methods can be classified as engineering controls or personal protective equipment.

6.1 Engineering Controls

Engineering controls include all measures designed to minimize the possibility of allowing an inhalation hazard to occur. Engineering controls are to be the first step in reducing worker exposure at this site.

6.1.1 Control Zones

To control access to potentially contaminated areas, the Site Safety Officer will establish limited access control zones as follows. Personnel should only enter the exclusion zone to perform specific work tasks, and then should immediately exit. By strictly limiting the amount of time that an employee could be exposed to a potential contaminant, the possibility of exposure over the PEL values is reduced. All planning and discussions of the project must take place in the support zone.

Exclusion Zone

An exclusion zone will be established around any operations where contaminated soil or groundwater is present. No one will be allowed in the work area unless they are equipped with the equipment the SSC has deemed necessary and they have read this Safety Plan. Employees should plan their entry, complete their tasks in the shortest time possible, and exit the exclusion zone as soon as the task is completed.

Contamination Reduction Zone

A CRZ will be established outside the exclusion zone. No personnel or equipment will be allowed to leave the CRZ without first being decontaminated in accordance with Section 7. The CRZ can either extend around the entire exclusion zone if space permits, or it can just be located at the access control points.

Personnel assisting workers with decontamination must be utilizing personal protective equipment (PPE) of the same type as the workers in the exclusion zone. In any situation where contaminated media are present, the minimum protective equipment will be Tyvek coveralls and nitrile gloves.

Support Zone

The support zone consists of the remainder of the site area. No possibility of exposure to toxic contaminants is expected in this area, and no special protective methods will be needed. All workers in the support zone, however, will need to comply with standard job site safety requirements.

6.1.2 Forced Ventilation

In the event that vapors exceed the permissible limits, explosive-proof blowers may be used to disperse the vapors and lower the concentrations. Periodic monitoring will be increased to document the effectiveness of the ventilation.

6.1.3 Material Control

All solid materials generated during this investigation will be placed in covered receptacles, such as steel drums or roll-off bins. Liquid wastes will be stored in steel drums or portable tanks. All waste receptacles are to be appropriately labeled.

6.1.4 Dust Control

Light application of water will be used to control dust. Much of the site is paved, which will inhibit dust generated by moving equipment. The operations anticipated for this workplan (drilling and well installation) typically do not generate dust.

6.2 Personal Protective Equipment

When engineering controls are not effective or feasible, workers shall be required to use the following protective equipment. Any workers using respiratory protection equipment must be currently medically certified to do so, and have passed a qualitative fit test within the preceding year.

6.2.1 Level D Protection

EPA Level D Personal Protective Equipment is acceptable for areas with no inhalation hazard, or where the hazard has been demonstrated to be below the action levels. Level D protection will include:

- Worker overalls or other suitable work clothes.
- Safety boots with steel toe and shank
- Hard hat
- Nitrile gloves and Tyvek® overalls are to be used when handling samples of soil or groundwater. Gloves and Tyvek suits will be replaced if they come in contact with liquid material.

6.2.2 Level C Protection

Level C Protection is suitable for use when limited concentrations of the chemicals of concern are present. Level C will consist of the following equipment:

- Tyvek coveralls or equivalent when working with solid materials
- Safety boots with steel toe and shank
- Safety glasses or goggles
- Hard hat
- Nitrile gloves with latex inner gloves
- Half- or Full-face Air Purifying Respirator (APR) with organic vapor cartridges and dust prefilters. Half face respirators provide protection up to 10 times the action level. Full face respirators provide protection up to 50 times the action level.

APR cartridges are to be replaced at the beginning of each shift and whenever breakthrough is noted. Breakthrough is any indication of an unusual taste, odor, or sensation. Gloves and Tyvek suits will be replaced if they come in contact with liquid material.

6.2.3 Level B Protection

If the inhalation hazards exceed the safe use limitations of the air purifying respirator equipment (any contaminant greater than 50 times its action level), the following protective equipment will be employed.

- Tyvek coveralls or equivalent when working with solid materials
- Poly coated Tyvek when working with liquid materials.

- Safety boots with steel toe and shank
- Hard hat
- Nitrile gloves with latex inner gloves
- Pressure-demand (positive pressure) full-face, self-contained breathing apparatus (SCBA) or airline respirator with escape SCBA operated in positive pressure mode.

7 DECONTAMINATION PROCEDURES

The following procedures will be implemented to minimize the spread of contaminants at this site.

7.1 Worker Decontamination

Anyone exiting a designated exclusion zone will do so through an access control point. The worker will proceed into the contamination reduction zone. Under no circumstances is dust to be shaken off equipment or clothing. The decontamination will proceed as follows:

1. Wash and rinse any hand tools that will be leaving the CRZ.
2. Removal disposable clothing by rolling it down the body. Place clothing in appropriate waste receptacle.
3. Remove and dispose of gloves.
4. Remove respirator. Dispose of filters in waste receptacle. Clean and rinse respirator prior to storage.
5. Remove and dispose of any inner gloves.
6. Proceed immediately to wash facility and wash hands and face. If work has concluded for the day, the worker should completely shower as soon as practical.

7.2 Heavy Equipment Decontamination

Prior to exiting the exclusion zone, all heavy equipment that was in contact with contaminated soil or water will be steam cleaned by workers in Level C equipment. All rinsate must be collected and appropriately disposed of.

8 TRAINING REQUIREMENTS AND CONTINGENCIES

This section identifies the minimum training requirements for workers at this site, and identifies site-specific training requirements and site contingency plans.

8.1 Training

At the time of assignment to this project, field personnel shall have completed at least 40 hours of off-site instruction in the health and safety issues involved in hazardous substance site work. Additionally, site personnel must have a minimum of 3 work days (24 hours) of actual field experience under the direct supervision of a trained, experienced supervisor. Employees who can show by documentation of work experience and/or training that they have had the equivalent to the stated requirements shall be considered as meeting these initial training requirements. Each site work must sign and date a Personal Acknowledgment (see Appendix D) stating that he or she has read and understood this HASP. Site supervisors must complete an additional eight hours of supervisory training.

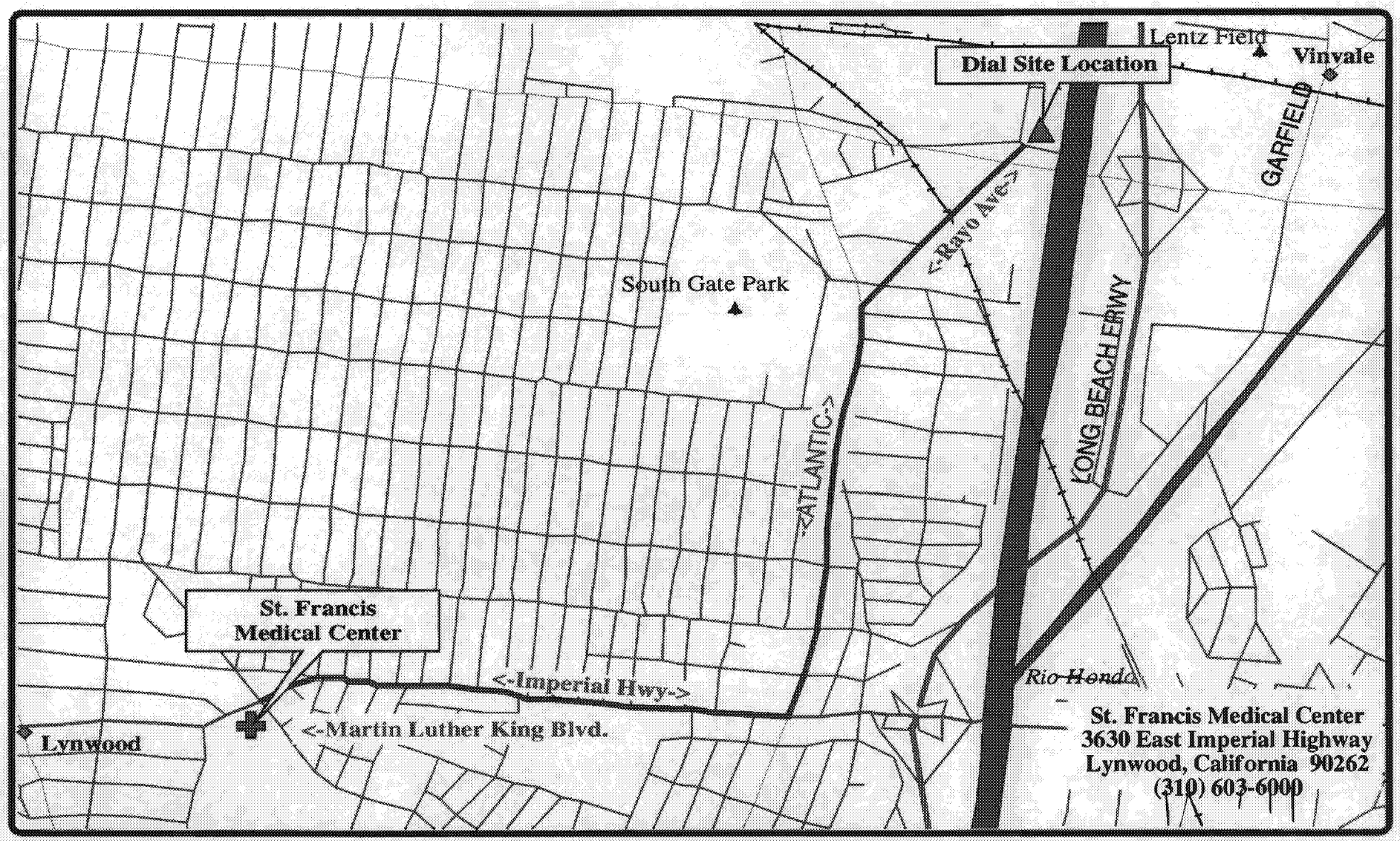
The site safety officer or his designate must conduct and document (see Appendix B) a tailgate safety meeting at the beginning of field activities, whenever new personnel arrive at the site, as site conditions change, or as needed.

8.2 Contingency Plans

The site safety officer will be responsible for maintaining a clean job site free from hazards and providing safe egress from the site. Cones and/or barricades and high visibility surveyor tape will be utilized for traffic control, if needed, and for limiting access to hazardous and restricted areas.

Prior to work startup, emergency medical procedures and lines of communication will be established. The fire department, ambulance service, project personnel, and directions to the nearest hospitals with an emergency room are identified in Table . Communications will be with a mobile phone located on site.

A vehicle shall be available on site during work activities to transport injured personnel to the identified emergency medical facilities. The designated route to those facilities are described in Table 8-1 and shown on Figure 1. Telephone numbers and locations for emergency room assistance shall be posted at the site.



EMCON

The Dial Corporation
9400 Rayo Avenue
South Gate, California

Hospital Route Map

FIGURE
1
20H93-001.006

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At a minimum, one site worker will be capable of rendering standard first-aid and cardiopulmonary resuscitation (CPR). A first-aid kit and adequate supply of fresh water will be available at the work site.

Emergency phone numbers (see Table 8-1) will be posted for the fire department, ambulance service, and nearest emergency medical clinic/hospital. The fastest route to the clinic/hospital, along with emergency telephone numbers, shall be prominently posted in the work area (see Figure 1). The site safety coordinator will be the lead person in emergency situations.

Should an accident occur, the site safety coordinator, or his designate, will immediately notify the project manager, complete an accident report (see Appendix C), and investigate the cause. Any recommended hazard control measures must be discussed with the site coordinator and meet with his approval prior to implementation. Any chemical exposures or occupational injuries and illnesses shall also be reported to the site safety coordinator and recorded, if recordable, on a Cal-OSHA Form No. 200. If a fatality occurs, three or more persons are admitted to a hospital, or property damage in excess of $700 occurs, the accident will be reported immediately to the Occupational Safety and Health Administration (OSHA) and to the State of California Department of Industrial Relations. Records of all site accidents and first aid treatments will be maintained by the project manger or site safety coordinator. Additionally, records of recordable work place injuries and illnesses are routinely maintained at EMCON's office for at least 5 years, as required by OSHA.

Table 8-1
Emergency Assistance Information

Fire Department/Paramedic/Ambulance Service		911
Underground Service Alert		(800) 422-4133
Site Safety Officer	(Office Hours 8:00 a.m. to 5:00 p.m.)	
	(After Office Hours)	
Project Manager	Ms. Diana Buchanan	(818) 841-1160
Regional Health and Safety Coordinator	Mr. Brian Primeau	(818) 841-1160

EMERGENCY MEDICAL FACILITY INFORMATION:

St. Francis Medical Center
3630 E. Imperial Highway
Lynwood, CA 90262
(310) 603-6000

Route: From the site, head south on Atlantic Avenue. Turn right (west) onto Imperial Highway. The hospital is just past Martin Luther King Blvd. on the left.

9 TASK SPECIFIC SAFETY REQUIREMENTS

This section includes a discussion of specific hazards and procedures to mitigate those hazards for each of the tasks to be conducted as part of this project.

9.1 Drilling and Well Installation

Soil samples will be obtained using hand and powered equipment. The samples will be used for identifying soil characteristics and contaminants. Potential hazards include exposure to contaminated soil and groundwater, buried and overhead obstructions, heat exposure, and noise. The specific safety procedures in Section 4 should be followed to reduce physical hazards.

Site personnel should stay upwind of the drill rig whenever feasible. Air monitoring in accordance with Section 5.0 should be implemented during drilling, and protective measure will be taken in accordance with Section 6.0 whenever vapors are encountered. The following general safety procedures should be followed during this project.

- The drill rig should only be operated by qualified personnel
- No person should be within two feet of the drill rig auger when it is turning
- The drill rig should be moved only with the mast in a lowered position
- Drums of drilling spoils and washwater should be moved be two people using mechanical assistance.
- A hand auger or utility probe should be used to clear the upper five feet of soils prior to using the drill auger

9.2 Groundwater Monitoring and Sampling

Groundwater monitoring consists of periodically gauging the wells for total depth and depth to water using an electronic probe. Sampling will consist of measuring the depth to water, purging several casing volumes of water from the well, and then obtaining a sample for laboratory analysis. Potential hazards associated with this task include exposure to chemical vapors or contaminated water; noise; heat stress; and the use of tools.

Site personnel should stay upwind of any open well whenever feasible. Air monitoring in accordance with Section 5 should be implemented during sampling, and protective measures will be taken in accordance with Section 6 whenever vapors are encountered. All samples, purge water, and wash water should be treated as contaminated until laboratory analysis proves otherwise.

The following general safety procedures should be followed during this task.

- Exclusion zones, marked out with cones, barriers, or tape, should be set up around any open well to discourage passerby from approaching
- If the well is known or is suspected of being contaminated, personal protective equipment must be worn in accordance with Section 6, and decontamination must be done in accordance with Section 7 prior to leaving the zone
- Any equipment coming in contact with groundwater must be handled with chemical resistant gloves
- Drums of purge water should be moved by two people using mechanical assistance.
- No eating, drinking, or smoking is allowed in the exclusion zone or CRZ
- All equipment must be scrub washed in a detergent solution and double rinsed prior to leaving the exclusion zone
- All portable electrical equipment must be in good working order, with no frayed or damaged cords, and grounded

APPENDIX A

AIR MONITORING FORM

AIR MONITORING RECORD

Project:_____ Date:_____

Location:_____

Technician performing monitoring:_____

Instrument Data

Instrument No.	Type & Model	Serial No.
1		
2		
3		

Field Calibration Data

Instrument No.	Calibration Gas & Conc.	Calibration Time	Verification Time	Verification Time	Verification Time
1					
2					
3					

AIR MONITORING DATA

Time	Instrument No.-Type	Concentration	Notes

APPENDIX B

TAILGATE SAFETY MEETING FORM

EMCON FIELD SAFETY MEETING FORM

Date:_____Time:_____ Job Number:_____

Client:_____ Address:_____

Site Location:_____

Scope of Work:_____

Safety Topics Presented

Protective Clothing/Equipment:_____

Chemical Hazard:_____

Physical Hazard:_____

Special Equipment:_____

Other:_____

Emergency Procedures:_____

Hospital Address and Route:_____

APPENDIX C

INJURY/ACCIDENT FORMS

EMCON
ACCIDENT AND NEAR MISS INCIDENT REPORTING FORM

GENERAL INSTRUCTIONS

This report is to be completed whenever an incident occurs that injures an EMCON employee, a member of the general public, an employee of another firm that is working with EMCON, or causes damage to EMCON equipment. This form is also to be completed whenever a 'near-miss' occurs that COULD have resulted in an injury or equipment damage.

A copy of this report should be kept by the person completing it, and copies should be sent to any affected employees, the office safety coordinator, and the regional safety coordinator.

Part 1 - Property Damage/Loss or Near Miss

Equipment Involved: _____

Name of Persons Involved: _____

Description of Incident: _____

_____

_____

_____

Estimated Cost of Damage: _____

A police report must also be filled out on all automobile accidents and on all equipment thefts. Please attach a copy of the police report to this document.

Part II - Personal Injury

Name of Person Injured: _____ Age: _____ SS# _____

Employer: _____ Position: _____

What was the person doing when injured? _____

_____

Exact location where injury occurred: _____

_____

Was the location of the accident a job site? _____

Describe Injury: _____

_____

How did Injury Occur? _____

_____

Did the person go to a medical facility (clinic, doctor's office, hospital)? _____

If yes, please state name, address, and phone number of facility:_____

_____

Did employee lose time off from work? If so, how long? _____

Number of days employee usually worked per week:_____

No. of hours worker per week:_____

Date of Birth:_____ Phone number to contact person:_____

Part III - Witnesses

Name:_____ Phone No. _____

Address:_____

Name:_____ Phone No. _____

Address:_____

Name:_____ Phone No. _____

Address:_____

Date of this report:_____ Report Prepared by:_____

Part IV - Diagram of Incident or Near Miss

Please draw a sketch of the incident. Use a separate sheet if necessary.

APPENDIX D

PERSONAL ACKNOWLEDGMENT

PERSONAL ACKNOWLEDGMENT

A component of the Health and Safety Plan (HASP), designed to provide personnel safety during this subsurface investigation requires that you receive training as described in the HASP (Section 8) prior to working at the site. Additionally, you are required to read and understand the HASP. When you have fulfilled these requirements, please sign and date this personal acknowledgment:

EMCON EMPLOYEES:

Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date

SUBCONTRACTOR EMPLOYEES:

Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date